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CLAIMS

1. Device for separating a mixture of gas with liquid and/or solids, comprising:
- a gravity separation vessel which is provided with an inlet for the supply of the mixture;
 - 5 - a processing vessel which can be mounted in the gravity separation vessel and connected to the inlet, which processing vessel comprises a first and second outlet opening for the discharge of respectively a first mixture part and a second mixture part to a space of the
 - 10 gravity separation vessel for further separation of the second mixture part;
 - a flow body arranged substantially concentrically in the processing vessel and provided with one or more swirl elements for setting the supplied
 - 15 mixture into swirling movement;
 - a discharge channel for discharging the first mixture part to the first outlet opening, which discharge channel is arranged substantially through the interior of the flow body and extends from the downstream side of the
 - 20 flow body to the first outlet opening;
 - a resistance element with a predetermined flow resistance arranged between the second outlet opening and the flow body.
2. Device as claimed in claim 1, comprising one
- 25 or more first counter-swirl elements arranged in the discharge channel for reducing the swirling movement of the first mixture part, downstream of which the first outlet opening is arranged.
3. Device as claimed in claim 1 or 2, wherein
- 30 the resistance element comprises one or more second counter-swirl elements for reducing the swirling movement of the second mixture part.
4. Device for separating a mixture of gas with liquid and/or solids, comprising:

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- a gravity separation vessel which is provided with an inlet for the supply of the mixture;
- a processing vessel which can be mounted in the gravity separation vessel and connected to the inlet,
- 5 which processing vessel comprises a first and second outlet opening for the discharge of respectively a first mixture part and a second mixture part to a space of the gravity separation vessel for further separation of the second mixture part;
- 10 - a flow body arranged in the longitudinal direction of the processing vessel;
- a discharge channel for discharging the first mixture part which is arranged substantially through the interior of the flow body and extends from the downstream
- 15 side of the flow body to the first outlet opening;
- a resistance element with a predetermined flow resistance which is arranged between the second outlet opening and the flow body, wherein the resistance element comprises one or more counter-swirl elements.
- 20 5. Device as claimed in claim 4, comprising one or more first counter-swirl elements arranged in the discharge channel for reducing the swirling movement of the first mixture part, downstream of which the first outlet opening is arranged.
- 25 6. Device for separating a mixture of gas with liquid and/or solids, comprising:
- a gravity separation vessel which is provided with an inlet for the supply of the mixture;
- a processing vessel which can be mounted in
- 30 the gravity separation vessel and connected to the inlet, which processing vessel comprises a first and second outlet opening for the discharge of respectively a first mixture part and a second mixture part to a space of the gravity separation vessel for further separation of the
- 35 second mixture part;
- a flow body arranged in the longitudinal direction of the processing vessel;

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- a discharge channel for discharging the first mixture part arranged substantially through the interior of the flow body and extending from the downstream side of the flow body to the first outlet opening;

5 - one or more first counter-swirl elements arranged in the discharge channel for reducing the swirling movement of the first mixture part, downstream of which the first outlet opening is arranged;

- a resistance element with a predetermined
10 flow resistance arranged between the second outlet opening and the flow body.

7. Device as claimed in any of the foregoing claims, wherein a swirl element comprises one or more swirling blades, wherein the swirling blades are formed
15 for setting into swirling movement or at least increasing the swirling movement of the mixture or mixture part flowing therealong.

8. Device as claimed in any of the claims 1-6, wherein a counter-swirl element comprises one or more
20 swirling blades, wherein the swirling blades are formed for decreasing the swirling movement of the mixture or mixture part flowing therealong.

9. Device as claimed in claim 8, wherein the angle between the longitudinal direction of the
25 processing vessel and a swirling blade amount to between 0. and 80 degrees.

10. Device as claimed in claim 8 or 9, wherein the swirling blades are curved.

11. Device as claimed in any of the foregoing
30 claims, wherein the processing vessel comprises an inner jacket which comprises a conically tapering part 10 in flow direction.

12. Device as claimed in claim 11, wherein the conically tapering part is positioned between the swirl
35 element and the resistance element.

13. Device as claimed in at least one of the foregoing claims, wherein the first mixture part is

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formed by a light fraction, while the second mixture part is formed by a heavy fraction.

14. Device as claimed in claim 13, wherein the light fraction comprises one or more gases and the heavy fraction comprises one or more liquids.

15. Device as claimed in claim 14, wherein the light fraction comprises natural gas and the heavy fraction oil and water.

16. Device as claimed in any of the foregoing claims, wherein the first mixture part comprises 1% by volume of water and/or solids and the second mixture part at least 95% by volume of liquid and/or solids.

17. Device as claimed in any of the foregoing claims, wherein the components of the processing vessel are embodied such that they can be fed through a manhole into the gravity separation vessel.

18. Device as claimed in claim 17, wherein the greatest dimension of a component amounts to a maximum of 150 cm.

19. Device as claimed in any of the foregoing claims, wherein the processing vessel is placed at least partially in the second mixture part situated in the space.

20. Device as claimed in any of the foregoing claims, comprising a perforated plate placed close to the second outlet opening and downstream thereof for ensuring a substantially uniform velocity profile on the downstream side thereof.

21. Device as claimed in any of the foregoing claims, wherein the inlet opening of the processing vessel is provided with means for feeding in the mixture for separating at an increased tangential speed.

22. Processing vessel evidently intended for a gravity separation vessel as claimed in any of the foregoing claims.

23. Method for treating a mixture of gas with liquid and/or solids, wherein the device as claimed in any of the claims 1-21 is applied.

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24. Method for designing a separation vessel
for separating a mixture into a light and heavy fraction,
wherein the processing vessel comprises an inlet for the
mixture, a first outlet for the light fraction and a
5 second outlet for the heavy fraction, in addition to
rotation means for setting the mixture into rotation,
wherein swirl elements arranged close to the inlet and/or
counter-swirl elements arranged close to the first and
second outlet are provided with swirling blades
10 dimensioned such that through the desired degree of
rotation a pressure is available in the separation vessel
for separating the mixture in as optimal a manner as
possible.

25. Separating vessel designed in accordance
15 with the method as claimed in claim 24.

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